

What is claimed is:

1. A method for treating particulate material, comprising the steps of:
  - filling said material into a container having a process chamber arranged around a longitudinal mid-axis of said container and formed as an annular chamber, said container further having a container central duct separated from said process chamber;
  - moving said material in said process chamber by introducing process air into a lower region of said process chamber from said container central duct which process air flows upwards in said process chamber and emerges from said process chamber again from an upper region of said process chamber;
  - leading said process air after emerging from said upper region of said process chamber, at least in a first treatment phase, at least partly into said container central duct in a continued, circulation-type flow, and leading said process air downwards again, where it is introduced into said process chamber again.
2. The method of claim 1, further comprising producing a flow of said process air in a lower region of said container central duct immediately adjacent to an opening area of said container central duct into said process chamber so that a suction pressure which is oriented downwards is present in said container central duct.
3. The method of claim 1, wherein said step of introducing said process air into said process chamber comprises introducing said process air with a centrifugal and tangential spin.
4. The method of claim 1, wherein, in that first treatment phase, said process air is circulated in said container as a substantially closed circulation system.

5. The method of claim 1, wherein, in at least one second treatment phase, further process air is fed into said container central duct from outside said container and is introduced into said lower region of said process chamber.

6. The method of claim 5, wherein, in said at least one second treatment phase, said process air emerging from said process chamber from said upper region of said process chamber is at least partly led away to outside said container without being fed back into said process chamber via said container central duct.

7. The method of claim 1, wherein, in at least one second treatment phase, further process air is fed into said container central duct from outside said container and is introduced into said lower region of said process chamber, and wherein a transition between said first treatment phase and said second treatment phase is carried out in a smooth manner.

8. The method of claim 1, wherein, in at least one second treatment phase, further process air is fed into said container central duct from outside said container and is introduced into said lower region of said process chamber, and wherein said further process air fed in from outside said container is led through a filter arranged above said process chamber.

9. The method of claim 1, wherein, in that first treatment phase, said material is acted on with a first moist medium in a lower opening area of said container central duct into said process chamber.

10. The method of claim 9, wherein, in at least one second treatment phase, said material is acted on with a second moist medium within said process chamber.

11. An apparatus for treating particulate material, comprising:

- a container having a process chamber and a container central duct separated from said process chamber, said container further having a longitudinal mid-axis;
- said process chamber being arranged around said longitudinal mid-axis of said container and being formed as an annular chamber, said process chamber further having a lower region and an upper region which is open;
- said container central duct forming a flow duct for process air and opening into said lower region of said process chamber, and communicating with said upper open region of said process chamber so as to conduct said process air in at least one first operating state, by said container central duct widening circumferentially and opening towards said upper region of said process chamber.

12. The apparatus of claim 11, wherein, in a lower region of said container central duct, a fan is arranged immediately adjacent to a location where said container central duct opens into said lower region of said process chamber.

13. The apparatus of claim 12, wherein said fan has fan blades which extend substantially radially and vertically, whose radially outer ends at least partly project, substantially with a suitable shape, into an opening area between said container central duct and said lower region of said process chamber.

14. The apparatus of claim 13, wherein said radially outer ends of said fan blades are curved backwards as viewed in a direction of rotation of said fan.

15. The apparatus of claim 11, wherein, in a lower region of said container central duct, a fan is arranged immediately adjacent to a location where said container central duct opens into said lower region of said process chamber, and wherein said fan has fan blades which extend to different radial extents.

16. The apparatus of claim 11, wherein said container is connectable to an external process air feed system and has a feed air duct which is connected to said container central duct.

17. The apparatus of claim 16, wherein at least one of a valve and a bulkhead is provided in order to connect said feed air duct to said container central duct so as to conduct said process air or to seal off said container central duct with respect to said feed duct.

18. The apparatus of claim 17, wherein, in an operating state in which said feed air duct is connected to said container central duct so as to conduct said process air, said at least one of said valve and said bulkhead seals off said container central duct in a substantially airtight manner with respect to said open upper region of said process chamber.

19. The apparatus of claim 11, wherein at least one of a valve and a bulkhead is provided in order to connect said feed air duct to said container central duct so as to conduct said process air or to seal off said container central duct with respect to said feed duct, and wherein said at least one of said valve or said bulkhead has at least one operating position in which both said feed air duct is connected to said container central duct and said container central duct is connected to said open upper region of said process chamber, both so as to conduct process air.

20. The apparatus of claim 11, wherein said container is connectable to an external process air feed system and has a feed air duct which is connected to said container central duct, and wherein above said process chamber there is arranged a filter which is connected into the flow path of said feed air duct.

21. The apparatus of claim 20, wherein said feed air duct has a first shoe arranged above said filter and covering a sector of said filter, and the second

shoe opposite said first shoe and underneath said filter, which is connected to said container central duct, and wherein said first and said second shoe can be set into a circulating movement on said filter.

22. The apparatus of claim 11, wherein at least one first spray nozzle for spraying a first moist medium is arranged in a lower opening area of said container central duct into said process chamber, its spraying direction being oriented substantially into said process chamber.

23. The apparatus of claim 11, wherein, in a lower region of said container central duct, a fan is arranged immediately adjacent to a location where said container central duct opens into said lower region of said process chamber, and wherein at least one first spray nozzle for spraying a first moist medium is arranged on said fan and revolves with said fan.

24. The apparatus of claim 23, wherein said spraying direction of said at least one spray nozzle is oriented substantially backwards as based on a direction of rotation of said fan.

25. The apparatus of claim 24, wherein at least one second spray nozzle for spraying a second moist medium onto said material is arranged in said lower region of said process chamber and whose spraying direction is oriented substantially vertically and tangentially in a direction of rotation of said fan.

26. An apparatus for treating particulate material, comprising:

- a container having a process chamber and a container central duct separated from said process chamber, said container further having a longitudinal mid-axis;

- said process chamber being arranged around said longitudinal mid-axis of said container and being formed as an annular chamber, said process chamber further having a lower region and an upper region which is open;
- said container central duct forming a flow duct for process air and opening into said lower region of said process chamber, and communicating with said upper region of said process chamber so as to conduct process air in at least one first operating state;
- a fan arranged in a lower region of said container central duct and arranged immediately adjacent to an opening area of said container central duct into said process chamber.

27. The apparatus of claim 26, wherein said fan has fan blades which extend substantially radially and vertically, whose radially outer ends at least partly project, substantially with a suitable shape, into said opening area of said container central duct into said process chamber.

28. The apparatus of claim 27, wherein said radially outer ends of said fan blades are curved backwards as viewed in a direction of rotation of said fan.

29. The apparatus of claim 26, wherein said fan has fan blades which extend to different radial extents.

30. The apparatus of claim 26, wherein at least one first spray nozzle for spraying a first moist medium is arranged on said fan and revolves with said fan.

31. The apparatus of claim 30, wherein a spraying direction of said at least one spray nozzle is oriented substantially backwards as based on a direction of rotation of said fan.

32. The apparatus of claim 30, wherein at least one second spray nozzle for spraying a second moist medium onto said material is provided, which is arranged in said lower region of said process chamber and whose spraying direction is oriented substantially vertically and tangentially in a direction of rotation of said fan.